

CHAUTAUQUA RESORT (PWSNO 1280047) SOURCE WATER ASSESSMENT REPORT

June 26, 2001



State of Idaho Department of Environmental Quality

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SOURCE WATER ASSESSMENT FOR CHAUTAUQUA RESORT

Under the Federal Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. The Idaho Department of Environmental Quality is completing the assessments for all Idaho public drinking water systems. The assessment for your particular drinking water source is based on a land use inventory within a 1,000 foot radius of your well, your water quality history, construction characteristics associated with your well or wells, and site specific sensitivity factors associated with the aquifer your water is drawn from.

This report, *Source Water Assessment for Chautauqua Resort* describes the public drinking water source, potential contaminant sites located within a 1000-foot boundary around the drinking water source, and the susceptibility (risk) that may be associated with any associated potential contaminants. This assessment, taken into account with local knowledge and concerns, should be used as a planning tool to develop and implement appropriate protection measures for this system. **The results should not be used as an absolute measure of risk and are not intended to undermine the confidence in your water system.**

Potential Contaminant Inventory. The Chautauqua Resort, located on the western side of Spirit Lake is a community of seasonal homes. Drinking water for 26 connections is supplied by a 340-foot deep well. During the summer season, the resort serves a population of up to 80 people. A pellet chlorinator is used to treat the water for iron removal before the water enters the reservoir and distribution system. Potential contaminant sources documented inside the 1000-foot boundary around the well include surface water, roads, and residential septic systems.

The map on page 5 of this report shows the well location, the 1000-foot boundary and approximate locations of roads, buildings and the septic systems relative to the wells. The well is about 50 feet from the shore of Spirit Lake and needs to be tested to determine whether it is directly influenced by surface water. Table 1 summarizes information about the sites inventoried and contaminants that may be associated with them.

Table 1. Chautauqua Resort Potential Contaminant Inventory

Map ID	Source Description	Potential Contaminants	Source of Information
1	Roads	IOC, SOC, VOC Microbial	USGS Map
2	Surface Water	IOC, SOC, VOC Microbial	USGS Map
3 and 4	Septic Systems	IOC, Microbial	PWS File

IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

USGS= United States Geological Survey, PWS = Public Water System

Water Quality History. Chautauqua Resort is required to monitor quarterly for bacterial contamination. Total coliform bacteria were present in samples drawn at the pump house in June and August 1999 and July 1998. The results appear to be isolated instances rather than an indication of an on-going problem. A pellet chlorinator is used to oxidize iron in water before distribution. Results of annual nitrate tests range from undetectable concentrations to 0.016 mg/l. The Maximum Contaminant Level (MCL) for nitrate is 10 mg/l. Radiological contaminants at concentration far below the MCL were detected in the initial water quality sample tested when the well was drilled. The initial well sample had the following concentrations of unregulated contaminants: 9.60 mg/l Sodium, 152 mg/l Sulphate; and 0.25 mg/l Fluoride. Test results showing iron concentrations are not in the public water system file for Chautauqua Resort.

Well Construction. The Chautauqua Resort well was drilled in January 1995 to a depth of 340 feet. The 6-inch steel casing is 103 feet deep, terminating in a layer of clay and decomposed granite. The bentonite surface seal extend about 20 feet below ground surface, terminating in a layer of sand and silty gravel. Current Idaho Department of Water Resources standards for well construction require the wall thickness of a six-inch casing to be a minimum of 0.280 inches. The wall thickness of the Chautauqua Resort well casing is 0.25 inches. The well is located in the flood plain for Spirit Lake.

Table 2. Selected Characteristics of Chautauqua Resort Well

Well	Total Depth (ft.)	Depth to Ground Water (ft)	Static Water Level (ft)	Depth of Surface Seal (ft)	Depth of Casing (ft)
Well #1	340	109-230	230	20+	103

Well Site Characteristics. Soils in the 1000-foot zone around the wells are generally poorly drained to moderately well drained, providing some protection against migration of contaminants toward the well. The well log describes the soils above the water table as predominately sand and silty gravel. There is a thin lens of clay and decomposed granite above the first water bearing stratum.

Susceptibility to Contamination. A susceptibility analysis DEQ conducted on the Chautauqua Resort well, incorporating information from the public water system file, and from the well log, ranked the well moderately susceptible to all classes of regulated contaminants. The susceptibility analysis worksheet for your well on pages 6 this report shows how your well was scored. Formulas used to compute the final susceptibility scores are shown on the bottom of the worksheet.

Source Water Protection. This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

For Chautauqua Resort source water protection activities should focus on completing the testing to determine whether the well is directly influenced by surface water.

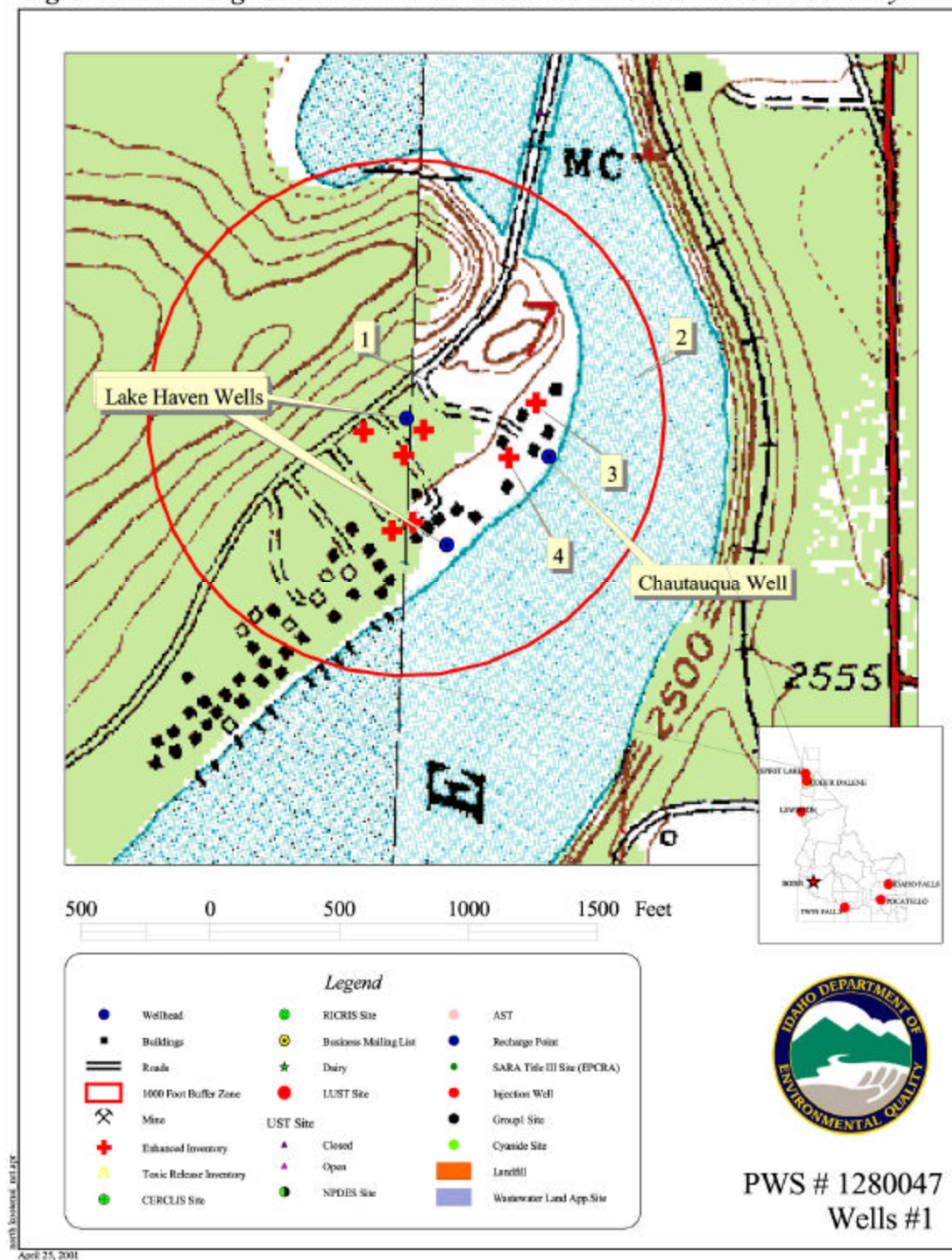
The resort should review its maintenance practices to be sure that no solvents, herbicides, road oil, dust abatement compounds etc. are used or stored within 50 feet of the well. It is also important to keep pets and wildlife away from the well. Because the Club doesn't have direct jurisdiction over the entire 1000-foot protection zones around its wells, it will be important to form partnerships with neighbors, and public agencies to regulate land uses that can degrade ground water quality. The resort should consider distributing public education materials to its users about septic tank maintenance, back flow protection and similar topics dealing with ground water protection. The goal of source water protection is to maintain current water quality for the future despite the changes we can expect with population growth in North Idaho.

For assistance in developing source water protection strategies please contact Tony Davis at the Coeur d'Alene Regional DEQ office at 208 769-1422.

DEQ Website:

<http://www.deq.state.id.us>

Figure 1. Chautauqua Resort Delineation and Potential Contaminant Inventory.



Attachment A

Chautauqua Resort Susceptibility Analysis Worksheet

Ground Water Susceptibility Analysis

Public Water System Name : **CHAUTAUQUA RESORT**
Public Water System Number : **1280047**

Well# : **WELL #1**
4/25/01 2:05:45 PM

1. System Construction		SCORE			
Drill Date	1/30/95				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	YES 2000				
Well meets IDWR construction standards	NO	1			
Wellhead and surface seal maintained	YES	0			
Casing and annular seal extend to low permeability unit	NO	2			
Highest production 100 feet below static water level	NO	1			
Well located outside the 100 year flood plain	NO	1			
Total System Construction Score		5			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	YES	0			
Vadose zone composed of gravel, fractured rock or unknown	YES	1			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	NO	2			
Total Hydrologic Score		4			
3. Potential Contaminant / Land Use - ZONE 1A		IOC	VOC	SOC	Microbial
		Score	Score	Score	Score
Land Use Zone 1A	RANGELAND, WOODLAND, OTHER	0	0	0	0
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		0	0	0	0
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	YES	3	2	2	3
(Score = # Sources X 2) 8 Points Maximum		6	4	4	6
Sources of Class II or III leacheable contaminants or Microbials	YES	3	2	2	
4 Points Maximum		3	2	2	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B	Less Than 25% Agricultural Land	0	0	0	0
Total Potential Contaminant Source / Land Use Score - Zone 1B		9	6	6	6
Cumulative Potential Contaminant / Land Use Score		9	6	6	6
4. Final Susceptibility Source Score		11	11	11	11
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate

The final scores for the susceptibility analysis were determined using the following formulas:

- 1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.27)
- 2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.35)

Final Susceptibility Ranking:

- 0 - 5 Low Susceptibility
- 6 - 12 Moderate Susceptibility
- > 13 High Susceptibility

POTENTIAL CONTAMINANT INVENTORY LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as Superfund is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.